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A CULTURAL RESOURCES SURVEY AND TESTING REPORT OF THE ELK CHUTE WEST DITCH CHANNEL CLEANOUT PROJECT, DUNKLIN AND PEMISCOT COUNTIES, MISSOURI

Prepared for

U. S. Army Corps of Engineers
Memphis District

Under Purchase Order DACW66-91-M-0756

by

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ABSTRACT

An intensive survey for prehistoric, historic, and architectural resources was conducted during April of 1991 within the Elk Chute West Ditch Channel Cleanout Project Area, located in Dunklin and Pemiscot Counties, Missouri. The study methods included a review of published literature, a review of State and Federal archival sources, interviews with persons knowledgeable of the area, and intensive field examination of the proposed impact area. The survey resulted in the identification of one potential prehistoric archeological site (23DU323) and one prehistoric isolated find . Both cultural properties were situated on severely eroded and deflated ground surfaces. However, due to the presence of both lithic and ceramic diagnostic artifacts at 23DU323, the site was revisited in May and a one meter square test unit was excavated. No subsurface cultural deposits were encountered during the course of the excavation. Based on the testing results no further work is recommended for the site or the project area.

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INTRODUCTION

An intensive survey for cultural resources was conducted within the impact area associated with the Elk Chute West Ditch Channel Cleanout Project, as directed by the U.S. Army Corps of Engineers, Memphis District under the conditions stipulated in Purchase Order No. DACW66-91-M-0756. The level of investigation performed for this project is defined in the scope of work as follows:

> "Intensive Survey" is defined as a comprehensive, systematic and detailed on-the-ground survey of an area, of sufficient intensity to determine the number, types, extent and distribution of cultural resources present and their relationship to project features (Appendix A: Paragraph 2.3).

This study was performed as required by the National Environmental Policy Act (Public Law 91-190), the National Historic Preservation Act (Public Law 89-665), the Preservation of Historic and Archaeological Data Act (Public Law 93-291), "Protection and

Enhancement of the Cultural Environment" (Executive Order 11593), "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. 800), and "Identification and Administration of Cultural Resources' (33 C.F.R. 305).

The Elk Chute West Ditch Channel Cleanout Project area extends from eastern Dunklin County into west-central Pemiscot County, Missouri as shown in Figure 1. The project area is along eight miles of Elk Chute Ditch and Main Ditch No. 8 (Elk Chute Ditch becomes Main Ditch No. 8 at Country Road NN which marks the boundary between Dunklin and Pemiscot Counties) beginning where County Road ZZ intersects Elk Chute Ditch, one mile west of Bowie Corner and ending at the junction of Main Ditch No. 8 and Main Ditch. The town of Kennett, Missouri is approximately seven miles northwest of the project area. The project is located in the Little River Drainage Basin as illustrated in Figure 2.

The planned improvements to the existing ditch consist of the cleaning of banks and graded excavation to the channel bottom in order to improve local drainage. These actions will result in a bottom width to range from 24 meters (80 feet) in the upstream portion of the project to 12 (40 feet) to 18 meters (60 feet) at the downstream end. All project impacts including the deposition of excavated material will be limited to the left descending bank. The width of the planned right-of-way is an uniform 12 meters (40 feet) over the entire length of the project area.

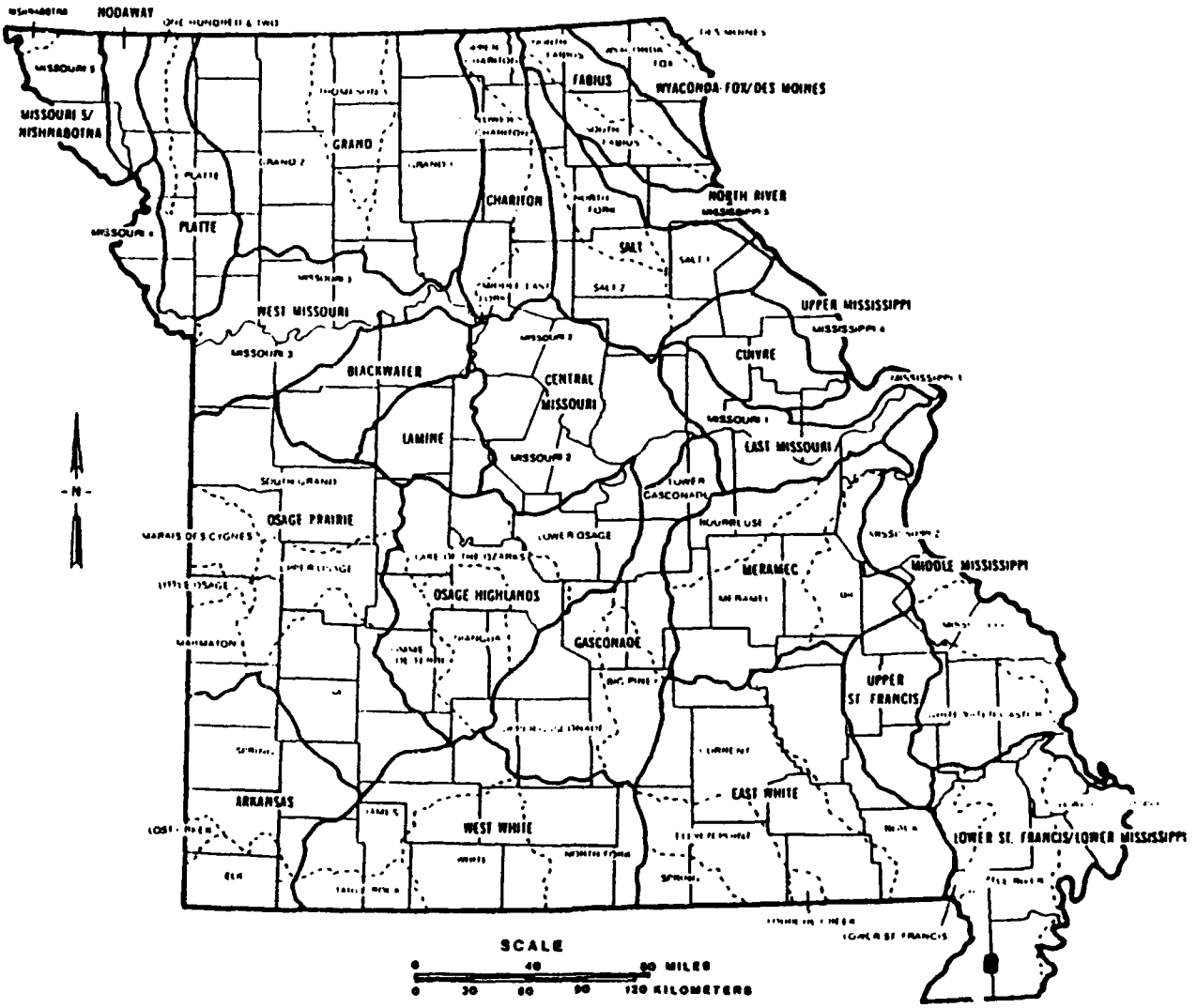
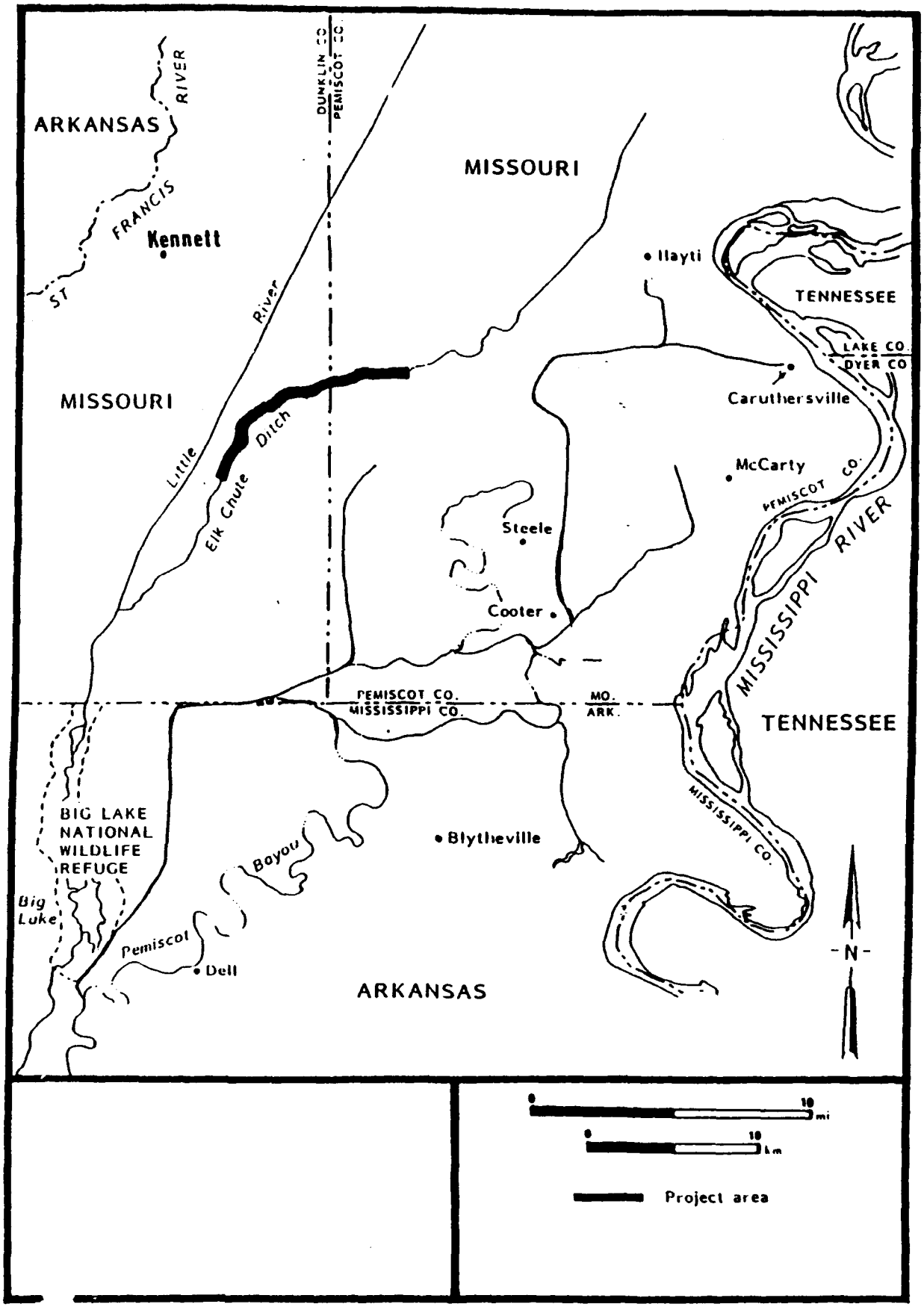


Figure 1. Project area location (Missouri Watershed Map).



Figur 2. Project Location.

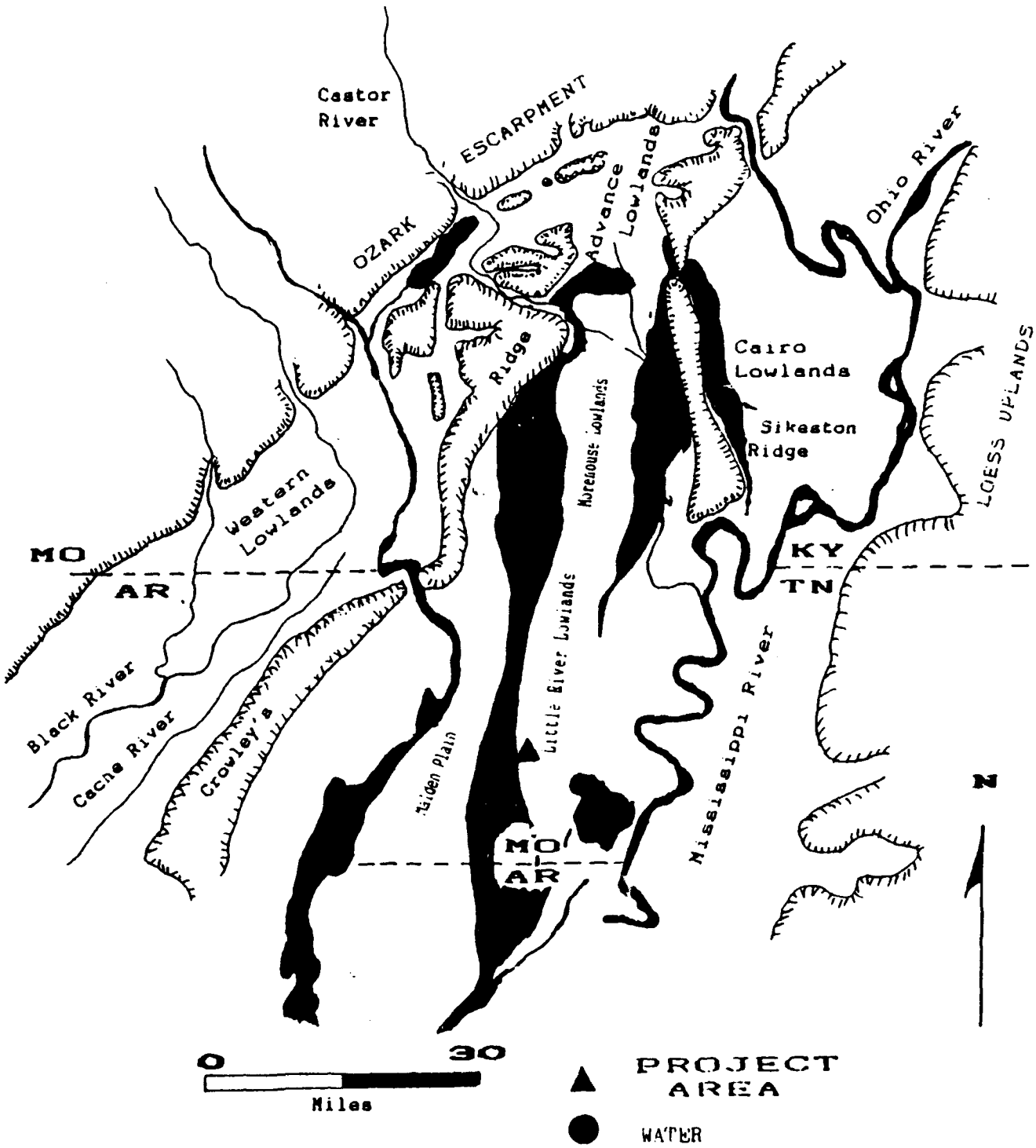


Figure 3. Project Area and Geologic Surfaces (after Saucier 1970)

Field investigations for this study were conducted between April 20 and April 22, 1991. The project area was revisited from May 25 - 27, 1991 to evaluate a prehistoric site found during the initial survey work.

In addition to this narrative report, data gathered during the project have been submitted to the U.S. Army Corps of Engineers, Memphis District. These data include maps of the area surveyed, field survey notes, photographs and artifacts to be curated.

ENVIRONMENTAL CONTEXT

The modern environment of the project area bears little resemblance to its natural state. The swamps have been drained and the natural levees have been precision-land leveled to a three percent grade. The perfectly flat fields covered with wheat, beans or milo are a marked contrast to the Southern Floodplain forest which once covered this project area. These changes make it difficult to perceive, much less measure, certain facets of the environment and often obscure the locations of cultural resources. Therefore, the methods of measuring certain past environmental variation must be indirect, because natural topography, flora, and fauna are no longer present in the landscape (Beadles 1976).

Physiography

The project area is located in the Eastern Lowland Physiographic region which is part of the Central Mississippi River Valley (Morse and Morse 1983). This portion of the Mississippi River Valley is a deeply incised canyon, known as the Mississippian Embayment, which has alluviated since the beginning of the Holocene. The valley is 80 miles wide at the project area and is divided roughly in half by Crowley's Ridge (Medford 1972;69).

The Mississippi River has structured the environment, first by

carving this great valley and, more recently, by depositing nearly a mile of silt within the valley's confining rock walls. The deposited alluvium is mostly stone-free, with sands deposited in the relict braided surface and the alluvial levees as its largest common sediment. This has resulted in the formation of some of the world's best and most extensive agricultural land with virtually no hard rocks or minerals. Prehistorically, and even today, rocks and minerals had to be imported from surrounding regions.

The project area is within the Little River Lowlands (Figure 3) situated in a localized physiographic area known as "gumbo flats" (Figure 4). The Little River basin consists of heavy textured alluvium deposited by slack water (Brown 1971). Elk Chute Ditch is a major alternate or old channel of the Little River and was one of the permanently ponded areas in Dunklin and Pemiscot Counties prior to modern drainage projects. The slackwater or backswamp deposits and nearly level terrain combine to provide an overall impression of Elk Chute Ditch as once existing as a slow-moving bayou meandering through a nearly level forested swampland.

The Relict Braided Surface

The Relict Braided Surface was deposited in terminal Pleistocene times by the meltwater from the continental glaciers. Saucier (1974) divides the Braided Stream Surface into two main terraces. The older terrace (T1) is primarily located west of

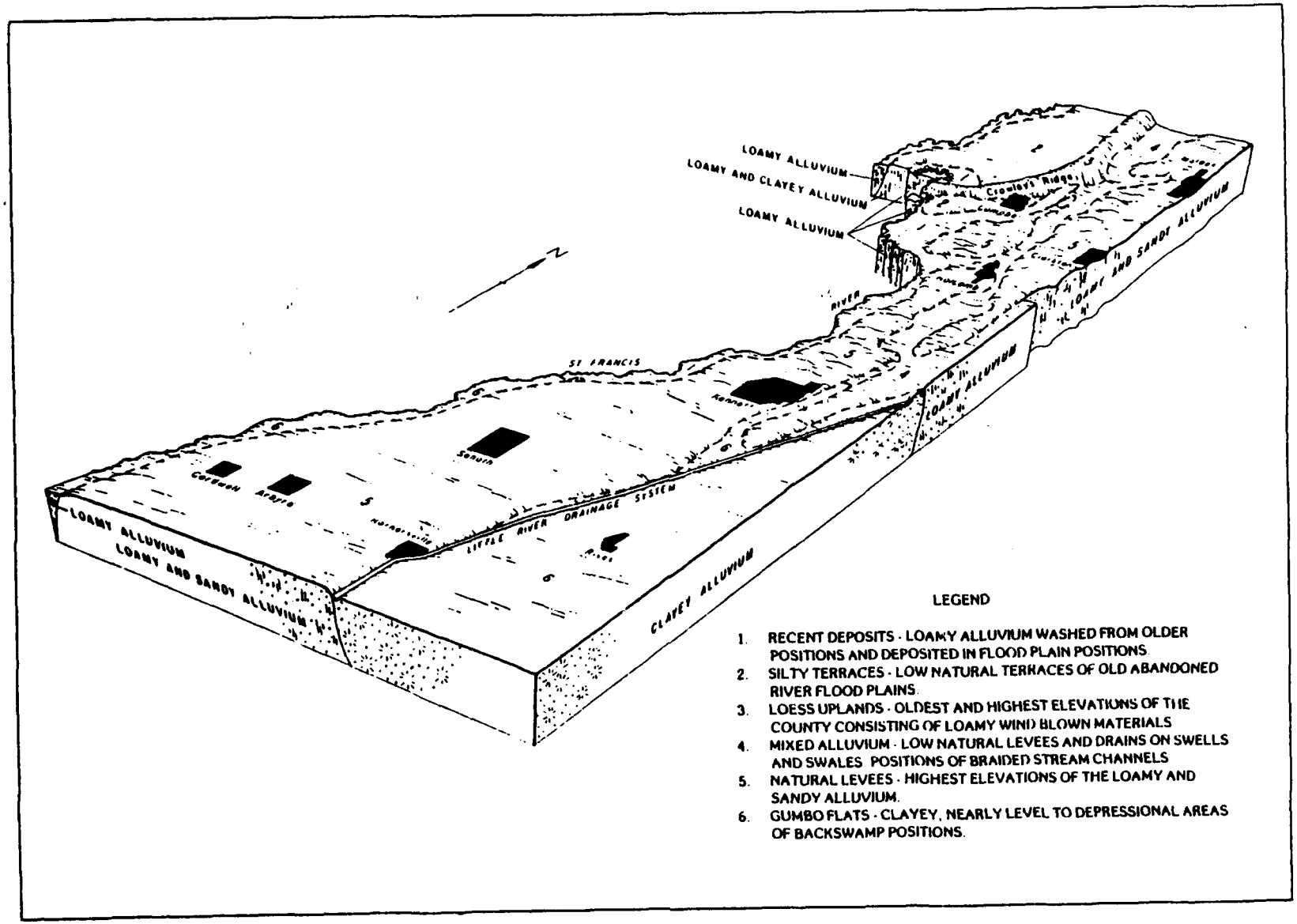


Figure 4 Surface features of Dunklin County, Missouri.

Crowley's Ridge, but a small patch exists east of the ridge in the St. Francis Basin. This terrace is sandier and has greater relief than does the later Terrace 2. Saucier divides Terrace 2 into two sublevels. The project area is within the lower eastern subterrace, however, it appears to be in the more recent backwater swamp clays of the Little River, Big Lake and Pemiscot Bayou which appear to overlay the Braided Surface Sands.

The Old Meander Belt

The Old Meander Belt was incised into the Relict Braided Surface sometime after the latter was deposited. This is located 25 kilometers (15 miles) to the southeast of the project area and apparently contributed much of the sediments deposited in the project area through periodic flooding and crevasse breaks in the natural levee. One of these crevasse breaks formed Pemiscot Bayou located 20 kilometers (12 miles) southeast of the project area. Other crevasse breaks to the north in the headwaters of Little River were apparently the cause of the Mississippi River flowing backwards during the New Madrid earthquake of 1811 to 1812. Present archeological data from this surface suggest that the silting of the Old Meander Belt by the Mississippi River started in the Late Archaic period (ca. 3000 - 500 BC). It appears likely that this happened before the Ohio was captured by the Mississippi River. The wave length of the meanders is about 3.2 km. (ca. 2 miles) with a meander radius of about 800 m (ca. 1/2 mile). This

compares to the modern wave lengths of about 11 km (ca. 7 miles) with 5 km. (ca. 3 miles) meander radii. The shorter wave lengths indicate a much smaller flow than the current flow. The Old Meander Belt s course appears to have been abandoned sometime in the Woodland period (ca. 500 BC - AD 800); however, there have been crevasse breaks in the past century (USGS 1939), and this area was inundated during the 1927 flood. The earliest quadrangle maps for the project area show the mid-19th-century meander line of the Mississippi River well above the modern river banks in Pemiscot Bayou.

Soils

Soils are the best indicators of past environments in the lower Mississippi Valley. This is due to two characteristics of riverine bottomland: 1) the manner of deposition effectively sorts different-sized particles by elevation, and 2) relative elevation and the water table determine the kinds of biota which can inhabit a particular econiche. These relationships are well established by archeological, geological, and ecological research in the Lower Mississippi Valley (Lewis 1974; Beadles 1976; Harris 1980; Delcourt et al. 1980; King 1981).

Soils of the study area consist almost entirely of Sharkey clay or Sharkey silty clay loam, with some areas of Sharkey/Steele complex soils and small patches of Alligator silty clay loam. The

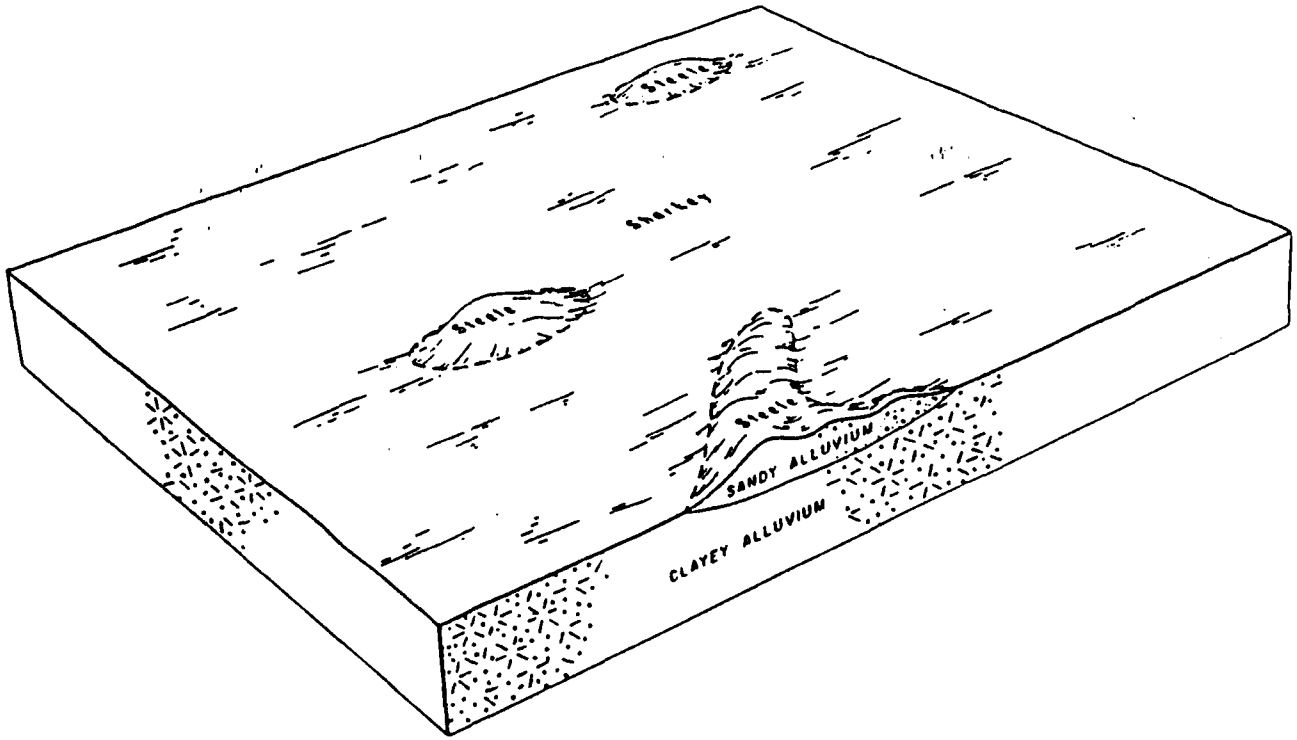


Figure 5 .Parent materials and position of soils in Sharkey association.

Steele component of the Sharkey/Steele complex (Figure 5) and the Alligator silty clay loam provide some minor (0.5 - 2 meters) relief in the otherwise flat terrain (Brown 1971; Gurley 1979). These areas should have permitted development of at least some levee and levee-edge biotic communities and at least seasonal areas suitable for human habitation.

The potential appearance of walnut, hickory, pecan, and persimmon in these areas and grapes along the more open watercourses represent the primary local plant food resources of the area other than cattail and water lily tubers. Large dry-land mammals present in the large Mississippi River natural levee areas are likely to have been severely limited in number and seasonal presence by the small, scattered nature of the higher land areas. Aquatic and avian species would thus have represented the primary potential sources of meat in the area. The overall resource base thus appears best suited for seasonal hunting, fishing, and gathering activities during the summer or fall.

Macrobiotic Communities

"Macrobiotic" communities - levee, ecotone, and swamp - are composed of different species of plants and animals. Table 1 presents an arboreal species composition reconstructed in Mississippi County, Missouri (Lewis 1974:19-28).

Levee

The Levee Macrobiotic Community, which does not occur in the project area, includes two plant communities: 1) the Cottonwood-Sycamore community found along the active river channel and 2) the Sweetgum-Elm Cane Ridge forest on abandoned courses. The arboreal species found in the Sweetgum-Elm community include all of the species found along the natural levees, however, their mix is considerably different. These two communities are in the highest topographic position in the county and these areas also support a dense understory of plants including cane (Arundinaria gigantea), spice bush (Linders Benzoin), pawpaw (Asimina trilobe), trumpet creeper (Campsis radicans), red bud (Cercis canadensis), greenbrier (Smilax sp.), poison ivy (Rhus radicans) and a number of less frequent herbaceous plants. The most common of these was cane, which often formed nearly impenetrable canebrakes. These provided cover for many of the larger species of land animals and were an important source of weaving and construction material.

The major mammals included in this biotic community included white-tailed deer (Odocoileus virginianus), cougar (Felis concolor), black bear (Ursus americanus), elk (Cervis canadensis), skunk (Mephitis mephitis), opossum (Didelphus marsupialis), raccoon (Procyon lotor), eastern cottontail rabbit (Sylvilagus floridanus), gray fox (Urocyon cinereoargenteus), and gray squirrel (Sciurus carolinensis). Important avian species included the wild turkey

(Meleagris gallopavo), the prairie chicken (Tympanuchus cupido), ruffed grouse (Bonasa umbellus), passenger pigeon (Ectopistis migratorius) and Carolina paroquet (Conuropsis carolinensis).

Prior to artificial levee construction the natural levees were the best farmland in this environment, due to their location at the highest elevations from which the spring floods rapidly receded and drained. This environment provided for a large number of useful species of plants and animals, making it an attractive place for settlement at virtually all times (except during floods) since the levees were laid down.

Table 1. Arboreal species composition of three biotic communities in Mississippi County, Missouri (percent per community)

Species	Levee	Edge	Swamp
American Elm (*Ulmus* sp.)	23	19	
Ash (*Fraxinus* sp.)	11	14	2
Bald Cypress (*Taxodium distichum*)		7	50
Black Gum (*Nyssa sylvatica*)	T	1	
Blackhaw (*Viburnum* sp.)	T		
Black Walnut (*uglans nigra*)	2		
Box Elder (*Acer \negundo*)	2		
Cherry (*Prunus* sp.)	T		
Cottonwood (*Populus* sp.)	1	3	
Dogwood (*Cornus* sp.)	1		
Hackberry (*Celtus occidentalis*)	12	9	
Hickory (*Carya* sp.)	5	4	
Shellbark (*Carya laciniosa*)	T		
Hornbeam (*Ostrya virginiana*)	2		
Kentucky Coffee Tree (*Gymnocladus dioi·a*)	T		
Locust, ?	T		
Black (*Robinia pseudo-acacia*)	T		
Honey (*Gleditsia Triancanthos*)	T	1	14
Maple, (*Acer* sp.)	3	8	
Sugar (*Acer Saccharum*)	1		
Oak, Black (*Quercus velutina*)	5	2	
Burr (*Quercus macrocarpa*)	1	3	2
Overcup (*Quercus lyrata*)	1		
Post (*Quercus stellata*)	T		
Red (*Quercus rubra*)	1	1	
Spanish (*Quercus falcata*)	1		
Swamp (*Quercus bicolor*)	T	1	
White (*Quercus alba*)	1	1	
Pecan (*Carya illinoensis*)	1	1	
Persimmon (*Diospyros virginiana*)	T	2	2
Plum (*Prunus* sp.)	T		
Red Haw (*Crategus* sp.)	T	1	11
Red Mulberry (*Morus rubra*)	T		
Sassafras (*Sassafras albidum*)	T		
Sweetgum (*Liquidamber styraciflua*)	20	18	
Sycamore (*Platanus occidentalis*)	1		
Willow (*Silix* sp.)	1	2	18

Abbreviations: T=Trace (i.e. <1%); W=known preferred wood; F= known Food Resource; D=Known drink resource. Data based on Lewis 1974:18-28.

Levee/Swamp Acidemia

The macrobiotic community Lewis (1974:24-25) has called the Sweetgum-Elm-Cypress Seasonal Swamp may have been in parts of the project area. This ecotone had few species present at any one time and a noticeably clear understory. The arboreal species composition includes more water-tolerant species (Cypress, Willow, and Red Haw) and at times had aquatic animal species. Flooded regularly every year for several weeks to several months, the clay soils retained the moisture longer than on the levees. These locations wer clearly much less desirable for year round occupation than were the levees, but were easy to traverse in dry periods.

Different fauna occupied the area seasonally, drawn from the adjacent swamps and levees. In addition, the levee/swamp ecotone was a preferred habitat of the giant swamp rabbit (Sylvilagus aquaticus) and crawfish. It is probable that many aquatic species, such as fish, were stranded and scavenged by the omnivores of the forest during the changing of this environment from a wetland to a dry open swampscape. These soils are characteristically poorly drained due to the presence of clays in the upper horizons. In this environment normally aquatic trees, especially cypress, would have been exploitable with land-based technology.

Swamp

Included in this stratum are all of the different environments which were underwater prior to drainage. This is defined by all of the soils deposited in slackwater conditions, which are all low lying, comprising most of the project area. The following different ecozones were included under this rubric before the drainage: river channels, lakes, marsh and cypress deep swamp. These are different successional stages in this environment, but all are aquatic. The only one of the three which has arboreal species is the Cypress Deep Swamp.

Several important herbaceous species were found in these aquatic environments. These included cattails (Typha latifolia), various grape vines (Vitis sp.), button bush (Cephalanthus occidentalis), and hibiscus (Hibiscus sp.). The latter was an important source of salt (Morse and Morse 1980).

The fauna of the aquatic environment were quite different from the terrestrial species, which seldom penetrated beyond the edge of the swamp. Beaver, mink and otter were important swamp mammals. Of special interest were fish and waterfowl which were in large quantities in this great riverine flyway. In order to exploit these resources a means of water transportation is necessary, such as dugout canoes. They have been dated to at least 3000 BC and it is likely that they are a great deal earlier.

Summary of Environmental Factors Affecting Human Habitation

Recent coring work in the Big Lake-Pemiscot Bayou areas (Lafferty et al. 1987) has provided vital data on the Holocene geomorphological and ecological changes immediately adjacent to this project area, and reasonably expectable in this area as well.

In summary, the period of about 9000 - 6500 BP (7000 - 4500 BC) is characterized by a bottomland oak-hickory forest including sweetgum and possibly some juniper or cypress and pine. It was also during this period that the Mississippi River changed from a braided to a meandering stream with its channel near its present location by the end of the period. From about 6500 - 3500 BP (4500 - 1500 BC) conditions seem to have been somewhat drier in the area, with fluctuating oak, declining hickory, and increasing sweetgum frequencies. Aquatic species are a major element in the pollen also, suggesting an increase in open water. This apparent contradiction would be consistent with the growth of natural levees along the Mississippi and St. Francis Rivers accompanied by poor backswamp drainage. Little River is thought to have developed during this period as a drainageway for the developing slackwater backswamp between the two main streams. Sediments from the 3500 - 3000 BP (1500 - 1000 BC) period show a sharp increase in aquatic

plants and decrease in all arboreal species. Backswamp ponding, possibly from the Left Hand Chute crevasse channel of the Mississippi River seems likely. It was then only after this period that modern pre-artificial drainage conditions were established.

The cultural implications of these conditions are that the area was not well suited for human habitation much beyond about 6500 to 6000 BP (4500 - 4000 BC), or after the Early Archaic cultural period except for seasonal exploitation of aquatic and migrating waterfowl species. Continual deposition of backswamp clays implies burial of any earlier sites on old braided stream surfaces under a blanket of fill whose modern surface has little resemblance to that of the earlier surface. Surface exposures of sites in the project area are thus most likely to consist of seasonal extractive sites left on the sand rises of the Steele-Sharkey soil complex by Terminal Archaic or later occupants.

Alteration of the Natural Environment

The project area is located in one of the most highly modified rural landscapes found in America. Extensive timbering and the drainage of natural swamps and wetlands has transformed the biotic environment. Additionally, these activities have led to a severe alteration of the physical environment by opening the land to intensive agriculture. Landleveling for agricultural purposes has almost totally altered the natural topography of the region

surrounding Elk Chute Ditch. The project area itself has undergone further modification as the result of past levee construction and channel enlargement activities.

The existing levee which parallels the left descending bank of Elk Chute Ditch and Main Ditch No. 8, was constructed during a period from 1946 to 1947. Fill was obtained from two sources: (1) a small levee located beyond the current levee's position, and (2) removal of the natural soil matrix to a depth of one meter (3 feet) or greater from an area beginning 12 meters (40 feet) from the toe of the levee to the top bank of the drainage (Charles Berry: personal communication).

Enlargement of the channel in 1963-64 also directly impacted the current project area. Dredge material was deposited adjacent to the stream bank and over the area previously used as a borrow for levee construction (Charles Berry: personal communication). Along most of the project area, surface elevations inside the levee are distinctly lower toward the channel as compared to those in the fields outside of the levee.

Currently, the land inside the levee is leased by the U.S. Government to private individuals for livestock grazing and cotton cultivation. Cultivation within the project area has caused additional disturbance to the land. Severe erosion and deep rutting from the movement of machinery is evident in some areas.

BACKGROUND STUDIES

Archival Review

A background and literature search was conducted by Greg Fox of the Archeological Survey of Missouri. A review of State Historic Preservation listing and records, Archeological Survey of Missouri site files, The National Register of Historic Places, and The Missouri Historic Sites and Buildings Inventory was conducted. None of these sources listed any sites or cultural properties within the Elk Chute West Ditch Channel Cleanout project area.

Two cultural sites have been recorded in two of the sections that the project area crosses. However, Missouri State Site Form information places them outside of the project area.

Previous Archeological Investigations

The Lower Mississippi Alluvial Valley has attracted the attention of archeologists and antiquarians for well over a century. The first evidence of this can be seen in Squier and Davis' Ancient Monuments of the Mississippi Valley (1848). While their first work was geared toward gaining an understanding of mound building and its origins, this early investigation did indicate the potential of the area for prehistoric research.

Specitic mention was made of mounds in the Missouri Bootheel (Morse and Morse 1980).

After Squier and Davis, most of the early work was concerned with the collection of specimens for museums (e.g. Potter 1880; Moore 1910; Fowke 1910). Some of these data were used to define the great ceramic traditions in the eastern United States (Holmes 1903), including Mississippian. Many of these original conceptualizations are still the basis on which our current chronologies are structured (e.g. Ford and Willey 1941; Griffin 1952; Chapman 1952, 1980).

There was a hiatus in the archeological work in the region until the 1940's when Adams and Walker began doing the first modern archeological work for the University of Missouri (Adams and Walker 1942; Walker and Adams 1946). Beginning in 1939 the Lower Mississippi Valley Survey conducted a number of test excavations at many of the large sites in the region (Phillips, Ford, and Griffin 1951; S. Williams 1954). This work has continued to the present in different parts of the valley and has produced definitions of many of the ceramic types in the Lower Mississippi Valley area.

The broad regional chronological sequence established by the early investigators was further developed and refined by Stephen Williams as he examined local collections and continued the process begun by the Lower Mississippi Alluvial Valley Survey. These data

formed the basis for his dissertation (1954), in which he presented sequences for the Little River Lowland applicable to the current study. Williams defined five separate phases. These are, from earliest to latest: Pascola, Hoecake, Black Bayou, Pemiscot Bayou and Nodena (Williams 1954).

Since Williams' sequence was published it has undergone a series of redefinitions and modifications as additional data has been accumulated (Hopgood 1969:69; Price et al. 1978; Morse 1980). Land leveling in the 1960's and 1970's attracted the attention of investigators in both Missouri (R.. Williams 1968) and Arkansas (Medford 1972). These studies and the associated salvage operations produced significant data as well as underscored the serious threat of land moving to archeological sites.

Beginning in the 1960's there has been an increase in the tempo and scope of archeological work carried out in the region. This has included a large number of survey and testing projects carried out with respect to proposed Federally funded projects (Table 2). These studies have greatly expanded the number of known sites from all periods of time. These projects have also produced a large body of data on the variation and range present within the site inventory. This knowledge has contributed to our overall understanding of man-land relationships and resulted in a number of predictive models.

Particularly noteworthy are the series of projects undertaken in connection with a proposed Missouri and Arkansas Power Corporation transmission line through New Madrid, Pemiscot and Dunklin counties, Missouri and Mississippi County, Arkansas. A major literature search and archival review (Price et al. 1978) and field survey (Trubowitz 1979) have produced a model which indicates that certain soil types have a higher potential for archeological sites than do other (Price and Price 1980).

In addition to the many survey and testing projects, there was a continuation of the large scale excavation projects carried out in the region. Major excavations at the Campbell site (Chapman and Anderson 1955), Lawhorn (Moselage 1962), Snodgrass site (Price 1973; Price and Griffin 1979), Lilbourn (Chapman et al. 1977; Cottier 1977a, 1977b; Cottier and Southard 1977), and Zebree (Morse and Morse 1980) have greatly expanded our understanding of the Mississippian cultures. This understanding has resulted in the definition of the temporal/spatial borders between different Woodland and Mississippian manifestations, and resulted in definitions of assemblages. Several major syntheses have resulted (Chapman 1975, 1980; Morse 1982a, 1982b; Morse and Morse 1983) which provide up-to-date summaries and interpretations of the work that has been carried out in the region.

Table 2. Previous Archeological Investigations in Northeast Arkansas and Southeast Missouri.

Investigator	Location and Contribution
Potter 1880	Archeological investigations in southeast Missouri
Evers 1880	Study of pottery of southeast Missouri.
Thomas 1894	Mound exploration in many of the large mound sites in southeast Missouri and northeast Arkansas.
Fowke 1910	Mound excavation in the Morehouse Lowlands.
Moore 1910, 1911, 1916	Excavations of large sites along the Mississippi, St. Francis, White, and Black Rivers.
Adams and Walker 1942	Survey of New Madrid County.
Walker and Adams 1946	Excavation of houses and palisade at the Mathews site.
Phillips, Ford, and Griffin 1951; Phillips 1970	Mapped and sampled selected sites in southeast Missouri, and northeast Arkansas, Lower Mississippi Valley Survey (LMVS), proposed ceramic chronology.
S. Williams 1954	Survey and excavation at several major sites in southeast Missouri, original definition of several Woodland and Mississippi phases.
Chapman and Anderson 1955	Excavation at the Campbell site, a large Late Mississippian Village in southeast Missouri.
Moselage 1962	Excavation at the Lawhorn site, a large Middle Mississippian Village in northeast Arkansas.
J. Williams 1964	Synthesis of fortified Indian villages in southeast Missouri.
Marshall 1965	Survey along I-55 route, located and tested many sites north of the project area.
Morse 1968	Initial testing of Zebree and Buckeye Landing sites.
J. Williams 1968	Salvage of sites in connection with land leveling, Little River Lowlands.
Redfield 1971	Dalton survey in Arkansas and Missouri Morehouse Lowlands.

Table 2. Previous Archeological Investigations (continued)

Investigator	Location and Contribution
Chapman 1975, 1980	Synthesis of archeology in Missouri.
Price et al. 1975	Little Black River survey.
Morse and Morse 1976	Preliminary report on Zebree excavations.
Chapman et al. 1977	Investigations at Lilbourn, Sikeston Ridge.
Harris 1977	Survey along Ditch 19, Dunklin County, Missouri.
LeeDecker 1978a	Reconnaissance Survey of Belle Fountain Ditch, Mississippi, Dunklin, and Pemiscot Co., Missouri.
LeeDecker 1978b	Cultural resources survey and testing along Ditch 19, Dunklin County, Missouri.
Padgett 1978	Initial cultural resource survey of the Arkansas Power and Light Company transmission line from Keo to Dell, Arkansas.
LeeDecker 1978c	Cultural resources survey and testing, Castor River Enlargement Project.
Dekin et al. 1978	Cultural resources overview and predictive model, St. Francis Basin.
LeeDecker 1979	Cultural resources survey, Ditch 29, Dunklin County, Missouri.
Morse 1979	Cultural resource survey inside Big Lake National Wildlife Refuge.
LeeDecker 1980a	Cultural resource survey, Ditch 81 control structure repairs.
LeeDecker 1980b	Cultural resources survey, Upper Buffalo Creek Ditch, Dunklin County, Missouri, and Mississippi County, Arkansas.
Morse and Morse 1980	Final report to COE on Zebree project.
J. Price 1980	Archeological investigations at 23DU244, limited activity Barnes site, Dunklin County, Missouri.

Table 2. Previous Archeological Investigations (continued)

Investigator	Location and Contribution
Price and Price 1980	A predictive model of archeological site frequency, transmission line, Dunklin, New Madrid, and Pemiscot Counties, Missouri.
Bennett and Higginbottom 1983	Mitigation at 23DU277, Late Archaic through Mississippi period site.
Keller 1983	Cultural resources survey and literature review of Belle Fountain Ditch and tributaries.
Klinger and Imhott 1983	Test Excavations 23DU253 and 23DU258 in Dunklin County, Missouri.
Morse and Morse 1983	Synthesis of Central Mississippi Valley prehistory.
Price and Price 1984	Testing Shell Lake Site, Lake Wappapello.
Lafferty et al. 1984, 1985	Cultural resource survey, testing and predictive model, Tyronza Watershed, Mississippi County, Arkansas.
Lafferty & Sierzchula 1986	Cultural Resources Survey and Record Check, Belle Fountain Ditch, Pemiscot and Dunklin Counties, Missouri.
Lafferty et al. 1987	Cultural resources survey and testing, pollen cores and geomorphic reconstruction, Ditch 29, Mississippi County, Arkansas.
Feltser 1988	Controlled surface collections on 3 sites, Stoddard and Dunklin Counties, Missouri.
Lafferty and Cande 1989	Cultural Resources survey and testing Eaker Air Force Base, Mississippi County, Arkansas.
Wadleigh and Thompson 1989	Proton Magnotometer survey, 3MS105, Eaker Air Force Base, Mississippi County, Arkansas.

Table 2. Previous Archeological Investigations (continued)

Investigator	Location and Contribution
Cande et al 1990	Cultural Resources Survey and Testing in Pemiscot County, Missouri.
Wright 1990	Cultural Resources survey in Campbell, Missouri (Dunklin County).

Prehistoric Background of the Study Area

The prehistory of the project area and its surrounding region, the Lower Mississippi Alluvial Valley, are best subsumed under a theoretical framework consisting of a series of cultural stages or periods. In the project area these are: Paleo-Indian (ca. 10,000 B.C. to 8500 B.C.), Archaic (ca. 8500 B.C. to 500 B.C.), Woodland (ca. 500 B.C. to A.D. 850), and Mississippian (ca. A.D. 850 to historic contact). These major stages have also been subdivided (Williams 1954, Hopgood 1969) and discussed in detail by Morse (1980) and Price et al. (1978) (Table 3). However, many chronological, spatial, and associated material cultural issues remain open for discussion and definition.

The Paleo-Indian Period

This period (10,000 - 8500 B.C.) is known in the region from scattered projectile point finds over most of the area. These include nine Clovis and Clovis-like points from the Bootheel (Chapman 1975:93).

No intact sites have yet been identified from this period, and the basal deposits of the major bluff shelters thus far excavated in the nearby Ozark Mountains have contained Dalton period assemblages. Lanceolate points are known from bluff shelters and high terraces (Sabo et al. 1982:54) which may represent different kinds of activities or extractive sites, as they have been shown to have been in other parts of the country. For the present, any Paleo-Indian site in the region is probably significant.

TABLE 3

ARCHAEOLOGICAL SEQUENCE IN THE ST. FRANCIS DRAINAGE AREA

Time	Cultural Period	Regional Phase Names	General Culture Traits
	Historic	American Settlement European trade: Quapaw, Osage	European ceramics, square nails, glass beads, gun flints, brass kettles
	Proto-Historic	De Soto Contact	Trade goods such as copper bells
1541			
	Late Mississippian	Nodena, Parkin, Walls,	Chiefdoms with large territories, large cemeteries, Nodena points, Bell Plain ceramics
	Middle Mississippian	Lawhorn, Cherry Valley, Powers, Cairo Lowland, Malden Plain, Pemiscot Bayou, Wilson, Fourche de Mas	Large planned villages with palisades, temple mounds and plazas, southeastern ceremonial complex motifs
	Early Mississippian	Big Lake, Hayti, Naylor, Beckwith, Black Bayou, Walnut Bend, Scatters	Shell tempered pottery, arrow points, chiefdom organized societies, intensive corn agriculture
AD 850			
	Late Woodland	Baytown, Barnes, Dunklin, Buckskull, Hoecake	Check-stamped, plain, and cord-marked ceramics, expanded base points
	Middle Woodland	Helena, La Plant, Turnage	Burial mounds, copper earspools, panpipes, effigy pipes
	Early Woodland	Tchula, Burkett, Pascola, Turkey Ridge	Pottery, beginning of horticulture
500 BC			
	Late Archaic	Poverty Point, Frierson, O'Bryan Ridge, Hugo	Stemmed and notched points, ground stone tools and ornaments, poverty point baked clay objects, tribal organization. Seasonal exploitation of upland and lowland resources.
	Middle Archaic		Bifurcate base points
	Early Archaic		Lanceolate points: Hardin, Cache River, Graham Cave
		Dalton, L'Anguille	Dalton point, Dalton adze, base camps, hunting and butchering camps, and cemeteries
8500 BC			
	Paleo-Indian		Fluted points. Possible hunting of Pleistocene megafauna.

Archaic Period

The terminal Paleo-Indian to early Archaic transition is a major issue in this area because of work carried out by Morse (1976, 1977) on the Dalton culture (8500 - 7500 B.C.). Although Morse (1976, 1977), Schiffer (1975), and others (Morse and Goodyear 1973) have considered the nature of the Dalton culture, there is still some question as to the identification of the differences between the Dalton artifactual complex and the true Paleo-Indian complexes. Perhaps of equal importance is the relationship of Dalton to subsequent Archaic cultures. Goodyear (1974) suggests that seen in terms of adaptive strategies, the Dalton culture should be considered as Early Archaic rather than as Paleo-Indian.

The Dalton Period is fairly well known in the Ozarks and adjacent areas of the Lower Mississippi Valley (McMillan 1971, Dickson 1982, Morse 1976, Price and Krakker 1975, Goodyear 1974). However, questions remain as to what place the region surrounding the project area occupies in the seasonal pattern of Dalton Period adaptive strategies.

Much of the current knowledge pertaining to the Early to Middle Archaic periods (7,500 - 3,000 B.C.) in the region is based on extrapolation from data recovered from bluff shelter excavations in the Ozarks. No controlled excavations have been done at any Early or Middle Archaic sites in southeast Missouri or northeast Arkansas (Chapman 1980: 234-238). Additionally, there are no radiocarbon dates for any Archaic period from southeast Missouri. At present, phases have not been defined.

During the Late Archaic period (3000 - 500 B.C.) there appears to be a continuing adaptation to the wetter conditions following the dry hypothermal. This corresponds to the sub-Boreal climatic episode (Sabo et al. 1982). While a fairly large number of Late Archaic sites are known in eastern Arkansas and Missouri and associated artifacts are usually present on any large multicomponent site, our understanding of this period is limited to excavations from a few sites (Morse and Morse 1983, Lafferty 1981). Two phases, the Frierson and O'Bryan Ridge are recognized but not well defined. Further refinement of the O'Bryan Ridge phase is of particular interest due to its contemporaneity with the Poverty Point culture. Designated by Phillips (1970), it is the northernmost expression of this Late Archaic development. O'Bryan Ridge sites are characterized by the presence of baked clay objects, most of which are termed amorphous or lumpy (Phillips 1970).

Woodland Period (500 B.C. - 850 A.D.)

The transition between Archaic and Woodland is poorly defined. The Early Woodland period (500-150 B.C.) appears to have been a continuation of the earlier lithic traditions with the addition of pottery. There are no radiocarbon dates from the early or beginning portions of the sequence. In the Little River area, Williams (1954) defined the Pascola phase as the local counterpart to the Buckett phase of the Cairo Lowland area. However, as Phillips (1970) noted, the phase is otherwise not well defined. Specific pottery types such as Cormorant Cord Impressed and Withers Fabric Impressed have been associated with these phases.

The Middle and Late Woodland periods were years of change with southeast Missouri participating in the "Hopewell Interaction Sphere." This association is marked by the presence of various dentate and zone-stamped pottery types, increased horticulture and the advent of mound construction. The Helena Crossing site in Phillips County, Arkansas is apparently an early locus of Hopewell interaction in the general area (Ford 1963).

Phillips (1970) describes two phases for the Middle Woodland period (150 B.C. - 500 A.D.) which may be represented in the project area. The LePlant phase, based specifically on the collections from the LePlant site and the Turnage phase.

Recent archeological finds indicate that the Late Woodland period (500 - 850 A.D.) is heavily represented in Dunklin, Pemiscot and surrounding counties (Morse and Morse 1983, Chapman 1980). Williams (1954) identified Barnes Cord-Marked and Barnes Plain ceramics at the Holcomb, Cockrum Landing, Wilkins Island, and Old Varney River sites. In addition, Baytown pottery has also been recovered at Willkins Island and Cockrum Landing (Marshall 1965). The temporal and geographic relationships of Baytown and Barnes and whether migration from Missouri gave rise to the Barnes culture is a major research concern for the area (Davis 1982). A clearer understanding of Barnes and Baytown traditions is pivotal to interpretations of the Mississippian tradition in the region.

Mississippian Period (850 A.D. to Historic Contact)

This period is known from the earliest investigations in the region (Thomas 1894; Holmes 1903; Moore 1916), and has been the most intensively investigated portion of the prehistoric record in northeast Arkansas and southeast Missouri (Chapman 1980; Morse and Morse 1983; Morse 1982; Morse 1981). There has been enough work done that the spatial limits of phases have been defined (cf. Chapman 1980; Morse and Morse 1983; Morse 1981; Smith 1990). During this period the native societies reached their height of development with fortified towns, organized warfare, more highly developed social organization, corn, bean, and squash agriculture and extensive trade networks. The bow and arrow is common and there is a highly developed ceramic technology (cf. Lafferty 1977; Morse and Morse 1980; Smith 1978). This was abruptly terminated by the DeSoto entrada in the mid-16th century (Hudson 1984; 1985; Morse and Morse 1983) which probably passed through the region south of the project area.

The Early Mississippian period (850 - 1050) could be represented in the area by the Old Varney River site in Dunklin County. Site attributes and material assemblages are similar to that of the Zebree site in northeast Arkansas. The similarities between the two sites could support Morse's (1977) hypothesis that Early Mississippian people migrated into Arkansas from southeast Missouri.

The Middle Mississippian period (1050 - 1400) is well represented

throughout the area (Williams 1954). Large villages with earthworks suggests that a large, well ordered society supported by corn agriculture and supplemented by hunting and gathering existed.

Locally the Malden Plain and Lawhorne Phases succeeded the Zebree Phase and its relatives. The Powers Phase (Price 1978) appears briefly to the northwest; a series of large phases developed to the northeast along Sikeston Ridge and in the Cairo Lowlands; and to the south were the antecedents of the Parkin and Nodena Phases.

The Late Mississippian period marks an apparent decline in cultural activity in southeast Missouri. Nodena phase sites may be present in southern Dunklin County. Additionally, the presence of the Wolfing Plates, a remarkable archeological discovery in Dunklin County, may be indication that the area was a route of dissemination for the Southern Cult (Hamilton, Hamilton, and Chapman 1974).

Historical Background of the Study Area

After the Spanish laid claim to the areas west of the Mississippi River by virtue of De Soto s visit, there was no further exploration of the region of the project by European countries until the Mississippi River expeditions of La Salle and De Tonti The first individuals to actually reach the project area were probably French hunters and trappers, arriving sometime after the settling of Ste. Genevieve (1735), St. Lovis (1764), and Cape Girardeau (1793),(Houck, 1908 II: 98-166;

Houck, 1909: I & II).

The Indian populations De Soto described were no longer in existence by the time the French began to penetrate the region, but new Indian settlements took place in the early 19th century when the Delaware and Shawnee entered the area. This influx was in part due to a Spanish policy established after the 1762 Treaty of Fontainbleau. In this treaty, France ceded the Louisiana Territory to Spain in order to avoid its probable loss to England during the Seven Years War. Subsequently, in an effort to build up an armed resistance to English and American interests, the Spanish encouraged eastern Indians to relocate to the Mississippi delta (Douglass 1961: 44; Houck 1908: I, 214, 266).

The settlements ranged from a large Indian village which was populated mostly by Cherokee in the vicinity of Wittsburg, Arkansas on the middle St. Francis, to Shawnee and Delaware villages near present-day Bloomfield and Kennett, Missouri respectively. Access to the Wittsburg area could have been gained by water while an Indian trail called the Natchitoches Trace which stretched from Cape Girardeau to the Ozark escarpment would have permitted access into Missouri (Price and Price 1978: 1-40). Early American settlers also referred to a "Shawnee Trail (Houck 1908: I, 266), parts of which include a road along Crowleys Ridge down to Wittsburg (Hartness, 1978:1-70). According to local accounts, a Delaware leader, Chilletecaux, settled the site of Kennett. It is further alleged that he later had a path cut north to

the Nachitoches Trace in order to facilitate settlement (Houck 1908: 1, 214; Douglass 1961: 42).

When the American government took possession of the project area as a consequence of the Louisiana Purchase of 1803, the presence of the Indian groups was considered a detriment to future growth. Therefore, between 1815 and 1832 a series of Indian removals began. Although Indian troubles occurred in Missouri, the Delaware and Shawnee remained friendly (Goodspeed 1888: 488-489).

Since the extremely swampy conditions of Dunklin and western Pemiscot Counties were some of the worst in the bootheel, white settlement was delayed (Goodspeed 1888: 308-309). The first American settler reputed to have moved into the Malden Plain area was Howard Moore who purchased the lands and buildings of the department Chilletecaux. Moore subsequently erected a grist mill and paved the way for further immigrants (Smyth-Davis 1896). The early settlement sites were usually located on sand islands or the Indian mounds that were situated between the Little River on the east and the St. Francis River to the west. The townsite of Chilletecaux became first known as Butler and finally as Kennett, and the family of William Horner gave its name to Hornersville (Douglass 1961: 307; Bradley 1951: 176).

The New Madrid earthquakes of 1811-12 drove away many of the early settlers and a hiatus in the region's development occurred. However, by 1831 and during the following three to four years major settlements were

located in both Dunklin and Pemiscot Counties (Goodspeed 1888:308-309; 300).

Economic progress of the area was slow, as the poorly drained land hindered development. A small percentage of the land was devoted to subsistence farming and limited cotton cultivation (Price and Price 1978: 1-40). The main revenue producer was hunting and trapping.

Trade patterns were aligned on a north-south axis rather than an east/west. It was possible, when adequate water depth permitted, to go by dugout from Kennett to Cottonwood Point on the Mississippi River, but most of the area s trade seems to have been with Cape Girardeau by means of the 'Shawnee Trail.' However, one individual, Edwin J. Langdon, who owned the Cotton Plant site and who built a levee on Buffalo Creek, did interest himself in river communications via flatboat on the Little River. The presence of a Confederate steamboat, the Daniel E. Miller, which was captured at Hornersville during the Civil War also indicates that trade could take place along the St. Francis River (Goodspeed 1888: 302).

Sympathies in the region generally lay with the Confederacy during the Civil War. No major battles were fought in the area although there were minor guerrilla skirmishes throughout the area (Price, Morrow, and Price 1978).

Post-War development continued to lag behind the rest of the

Bootheel Region and the area was described "as almost a wilderness" as late as 1881 (Shoemaker 1958: 101). Despite these conditions, the area's population had almost doubled since the counties were first incorporated.

The region developed rapidly during the 19th and early 20th centuries with the introduction of the railroad. The railroad's development had a pyramid effect on the local economy and natural environment (Bradley 1951).

The improved transportation system not only provided a more efficient mode for handling merchandise, it had another effect: it gave developers access to the rich forest areas. Subsequently, logging camps were established and the forests quickly fell. Further, rather than abandon the land after the forests were cleared, the timber companies became convinced that more profit could be derived from draining the land and setting up a sharecropper system. Consequently, with the prodding of northern drainage experts, local districts were organized under the jurisdiction of the county court while major projects were organized by circuit courts (Masterson and Fowler 1951: 134-143; Ogilvie 1970: 152-174).

With the advent of intensive one crop agriculture, the older means of subsistence were abandoned during the period from 1890 to 1910. The open range which has existed was eliminated, and the game which continued to be a commercial commodity until 1918 was systematically

eliminated (Harris 1977: 16). Finally, the boll weevil, which devastated cotton crops to the south of the project area, actually provided a cause for the intensification of cotton production in Dunklin and Pemiscot Counties. As areas to the south became unproductive the growers moved north adding to the general productivity of the area.

New Deal agricultural policies, combined with the mechanization of agriculture, helped to effect a second radical transformation of the region. The two trends of extended clearing and improved mechanization continue to the present with the transformation of the area nearly complete.

STATEMENT OF HYPOTHESIS

Research Objectives

One of the most significant advances in the state of the art of cultural resource management (CRM) has been the increased attention paid to the development and explicit use of predictive models. There has, in fact, been more predictive modeling work done in the St. Francis Basin than anywhere else in the southeast (Lafferty and Sierzchula 1986).

The kinds of research objectives that may be pursued during a particular CRM project depend on the scope of the project and on the state or quality of knowledge of a particular area. The small scale and the specific requirements detailed in the current scope of work (Appendix A) somewhat limits the scope of this project's primary research aims. The primary objectives of the present study are (1) to prepare an inventory of all cultural resources in the area, (2) to make recommendations as to what further evaluation, if any, is necessary in regard to any sites recorded in the project area, and (3) to document the field and background researches with a report detailing all procedures, findings, and results.

Additional research objectives were formulated in an attempt to interpret the project area's relationship within the region as a whole in regard to current predictive models. These where pursued by correlating the results of the background research and field

investigations and applying them to previous studies conducted in the surrounding area.

Expected Potential for Cultural Resources

When one considers the nature of the project area's environment prior to the massive modern drainage efforts, a relatively low potential for the occurrence of both prehistoric and historic archeological sites can be assumed.

Data directly related to the project area that supports this assumption include (1) Price and Price (1980) developed a model which predicted that the least probable location for sites were on slackwater soils, (2) Latterty et al. (1984, 1985) found that Sharkey clays have the lowest potential for sites, and (3) a series of investigations conducted at Belle Fountain Ditch and its tributaries (LeeDecker et al. 1978a, Keller 1983, Latterty and Sierzchula 1986) which is environmentally similar to the project area produced only two archeological sites and a number of modern historic activity areas.

FIELD METHODOLOGY

Survey Conditions

Previous to the time of the survey, the region had virtually been inundated by heavy rains. This resulted in a very wet and mucky ground surface throughout the project area with some lower lying sections having standing water. However, weather during the time of the survey was generally favorable, characterized by partly cloudy to sunny skies, occasional scattered light showers and moderate temperatures.

Surface visibility at the time of the survey contrasted markedly between the downstream and upstream portions of the project area. From a point 1.1 kilometers (.7 mile) west of Highway NN proceeding east to the downstream terminus of the project, ground visibility was obscured by thick grass. Much of this area is maintained as leased pasturage. Additionally, some sections had sparse tree growth adjacent to the channel. Standing water was more prevalent in this downstream portion of the project area, particularly in low lying areas juxtaposed between dredge piles and the toe of the levee. At the edge of the heavy pasture (1.1 kilometers west of Highway NN) begins an approximately 300 meter (1000 feet) stretch of thick woods which acts as a divider between the portion of the project area previously used for cotton cultivation and that used for pasturage.

The previously cultivated portion of the project area extends approximately 7.3 kilometers (4.4 miles) to the project's upstream terminus. Most of this area lay fallow, probably being too wet to prepare for cultivation, although some sections appeared to have been plowed earlier in the year. Sparse grass and weed cover generally afforded 75 - 100% ground visibility. A few isolated areas were more thickly vegetated resulting in slightly less visibility (50 - 75%).

The area outside of the levee is mostly characterized by fallow or recently cultivated fields with nearly 100% visibility.

Figure 6. View Across Survey Area Facing East.

Survey Methods

Given the degree of disturbance that has been documented for the project area combined with a generally low potential for site occurrence based on environmental associations and the low frequency of recorded archeological sites in the immediate area, a pedestrian survey of the project area was considered adequate (refer Appendix A: para. 4.3b). Considerable effort was made to supplement this strategy to ensure that a thorough search for cultural resources was conducted.

Because of the relatively narrow right-of-way, a single transect was walked in most areas. In addition, a total of 21 shovel test pits were excavated to confirm previous information on the nature of disturbance and to search for intact cultural deposits within the project area. These were of standard dimension (30 X 30 cm) with depths ranging from 30 - 60 centimeters. All fill was screened through 1/4 " mesh hardware cloth though with some difficulty in most cases due to the clay soils. Nineteen of the 21 shovel test pits were placed in the downstream portion of the project area where surface visibilities were generally less than 25%.

Examination of the soil profiles outside of the levee revealed a relatively intact soil matrix similar to that described in the appropriate soil surveys for the area (Brown 1971; Burley 1979). Because of the excellent ground visibility present over most of the

areas outside of the levee, and a relatively intact soil profile, a supplemental pedestrian survey for cultural resources was conducted. Approximately 90% of the land paralleling the project area outside of the levee was examined in this fashion.

An approximate 1.1 kilometers (.7 miles) of the right descending bank of Elk Chute Ditch was also examined. This area was opposite the locations of the archaeological sites (23DU323) located during the survey of the project area.

RESULTS

Overview

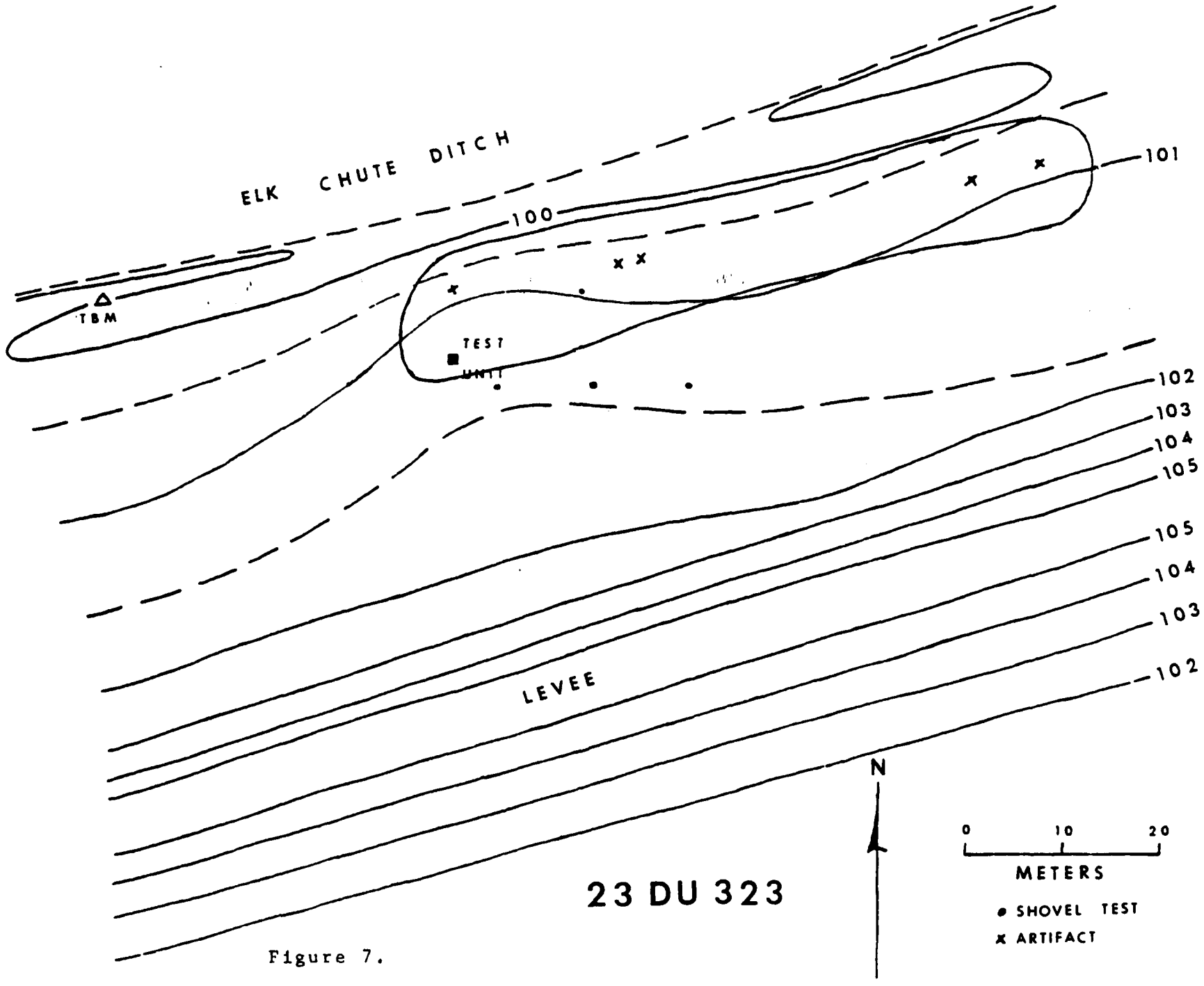
The project area has suffered significant disturbance from past construction and current land use practices. The impact of such activities on cultural resources is severe. This is particularly true of the small diffuse scatters of cultural materials, probably related to subsistence extractive activities, that might be expected in the area.

In light of this information, it is particularly remarkable that one potential prehistoric archeological site (23DU323) and one prehistoric isolated find were inventoried during the course of the pedestrian survey conducted within the project right-of-way.

Site Descriptions

23DU323

Prehistoric site 23DU323 was evidenced by the presence of a surface scatter of diagnostic lithic and ceramic artifacts over an approximate 15 X 80 meter (49 X 260 feet) area. It is located immediately adjacent to the top bank of Elk Chute Ditch. The ground surface of the site area is eroded and dissected by small erosional cuts that flow toward Elk Chute Ditch.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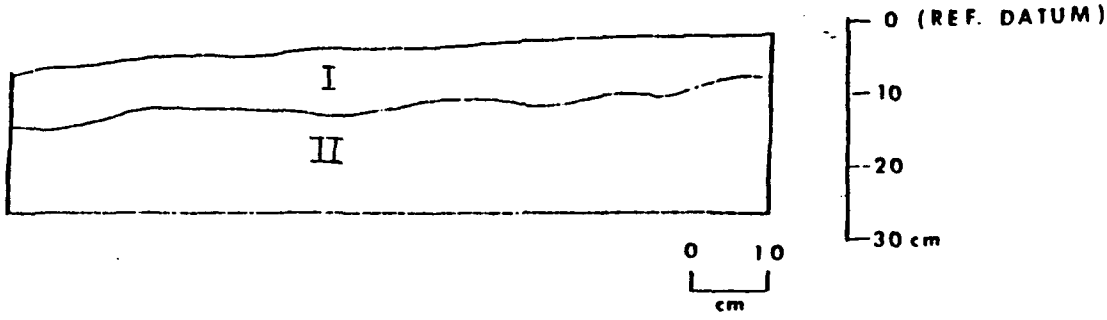
23 DU 323

Figure 7.

Two stemmed projectile points, reminiscent of several Late Archaic types, one projectile point with its stem broken off, and several Barnes Plain sherds were observed on the surface. The lithic artifacts were piece plotted and collected. Specimen 1 (Figure 7 left) is a stemmed dart point of Crowleys Ridge chert. It is similar to such Late Archaic types as Pickwick and Burkett. Specimen 2 (Figure 7 center) is a thick lanceolate point of Crowleys Ridge chert. It has faint side notches reminiscent of a wide range of types extending from Middle Archaic to Middle Woodland in affiliation. Specimen 3 (Figure 7 right) is the blade portion of a broad barbed or corner-notched point made of a dark grey chert. The remaining portion is most similar to such Late Archaic to Early Woodland types as Delhi and Keems.

The site surface is a dense grey clay common in the area. The site and its vicinity are apparently subject to frequent flooding and scouring. At the time of the survey Elk Chute Ditch was over its banks but was rapidly receding. The site area itself had recently been under water.

Four shovel tests were along the contour just above the washed out area in order to ascertain the presence or absence of subsurface cultural deposits. These tests encountered a dark clay loam (10YR3/2 - 10YR4/2) ranging from 4 to 12 centimeters in thickness.Underlying this



Stratum I : 10YR 4/2 Dark Greyish Brown Clay Loam

Stratum II: 10YR 4/1 - 5/1 Grey to Dark Grey Dense Clay
with
10YR 4/6 yellowish Brown stains

Figure 8. 23DU323 East Profile of 1 - meter Test Unit.

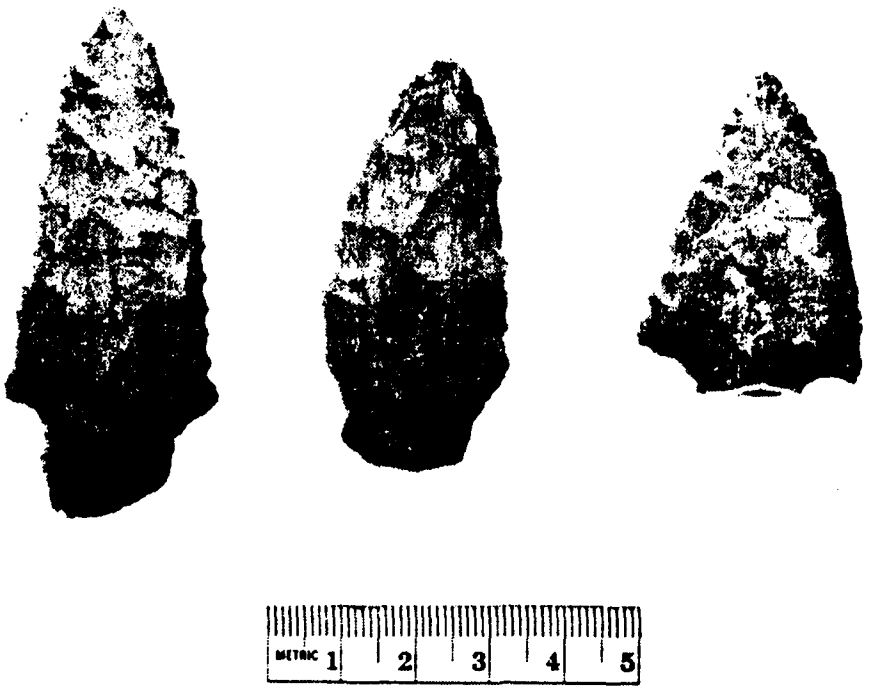


Figure 9. Projectile Points from 23DU323

layer was a dense grey clay (10YR4/1 - 10YR5/1). All these units were sterile.

Due to the concentration of culturally diagnostic artifacts found at the site, it was revisited in May in order to conduct additional mapping and testing. Elk Chute Ditch was found to have again overflowed its banks, covering the area where artifacts had initially been recovered. A one meter square test unit was excavated above the flooded zone in the vicinity of the initial shovel tests. The large test unit found 6 to 8 centimeters of dark greyish brown clay loam (10YR4/2) overlying dense grey clay (10YR4/1 -5/1) with yellowish brown mottling (10YR4/6) which continued by 10-cm levels to a depth of 24 cm below surface, where the excavation was terminated. No further cultural materials or evidence of subsurface cultural deposits were recovered.

Available data are sufficient to establish potential occupation of the site during some portion of the Late Archaic and the Woodland cultural periods. There is insufficient evidence to indicate site function or other aspects of occupation, and no indication of preserved cultural deposits.

Available data is insufficient to establish a temporal placement beyond a generalized Late Archaic to Woodland placement or to establish a site function.

Find Spot

This prehistoric isolated find consisted of one chalcedony interior flake located in a shallow erosional cut immediately adjacent to Elk Chute Ditch. No other evidence of cultural activity was observed.

RECOMMENDATIONS

Consideration of the test results from 23DU323 and the history of repeated severe distubance of the site area, and in fact the entire survey area by heavy equipment, indicates that no further archaeological work is necessary in the current project area.

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DESCRIPTION/SPECIFICATIONS

A CULTURAL RESOURCES SITE SURFACE
AND SUBSURFACE EVALUATION
WITHIN THE PROPOSED PERMIT AREA

1.1. General Scope of Services. The types of services to be performed by the Contractor include:

a. A Cultural Resources Site Surface and Subsurface Evaluation Within the Proposed Permit Area.

b. Detailed analysis of data obtained from fieldwork and other sources for the purpose of determining site significance with respect to National Register of Historic Places or to supply data prerequisite to performance of other work tasks.

c. Compilation and synthesis of all necessary data for making determinations of cultural resources site eligibility for the National Register of Historic Places, including preparation of National Register nomination forms.

d. Written site assessments and evaluations for environmental impact statements, environmental assessments, and other project documents.

1.2. Legal Contexts. Tasks to be performed are in partial fulfillment of the Memphis District's obligations under the National Historic Preservation Act of 1966 (P.L. 89-665), as amended; the National Environment Policy Act of 1969 (P.L. 91-190); Executive Order 11593, "Protection and Enhancement of Cultural Environment; the Archaeological Resources Protection Act of 1979 (PL 96-95); and the Advisory Council on Historic Preservation, "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800).

1.3. Personnel Standards.

a. The Contractor shall utilize a systematic, interdisciplinary approach to conduct the study. Specialized knowledge and skills will be used during the course of the study to include expertise in archeology, prehistory, ethnology, history, architecture, geology and other disciplines as required to fulfill requirements of this Scope of Work. Techniques and methodologies used for the study shall be representative of the state of current professional knowledge and development.

b. The following minimal experiential and academic standards shall apply to personnel involved in investigations described in this Scope of Work:

(1) Archeological Project Directors or Principal Investigator(s) (PI). Individuals in charge of an archeological project or research investigation contract, in addition to meeting the appropriate standards for archeologists, must have a publication record that demonstrates extensive experience in successful field project formulation, execution and technical monograph reporting. Unless otherwise directed by the Contracting Officer, it will be mandatory that at least one individual actively participating as Principal Investigator or Project Director under this contract, have demonstrated competence and ongoing interest in relevant research domains in the Southeast

Missouri Region. Extensive prior research experience as Principal Investigator or Project Director in immediately adjacent areas will also satisfy this requirement. The requirement may also be satisfied by utilizing consulting Co-principal Investigators averaging no less than 25% of Principal Investigator paid hours for the duration of contract activities. Changes in any Project Director or Principal Investigator during a delivery order must be approved by the Contracting Officer. The Contracting Officer may require suitable professional references to obtain estimates regarding the adequacy of prior work.

(2) Archeologist. The minimum formal qualifications for individuals practicing archeology as a profession are a B.A. or B.S. degree from an accredited college or university, followed by a minimum of two years of successful graduate study or equivalent with concentration in anthropology and specialization in archeology and at least two summer field schools or their equivalent under the supervision of archeologists of recognized competence. A Master's thesis or its equivalent in research and publication is highly recommended, as is the M.A. degree.

(3) Architectural Historian. The minimum professional qualifications in architectural history are a graduate degree in architectural history, historic preservation, or closely related fields, with course work in American architectural history; or a bachelor's degree in architectural history, historic preservation, or closely related field plus one of the following:

(a) At least two years full-time experience in research, writing, or teaching in American history or restoration architecture with an academic institution, historical organization or agency, museum, or other professional institution; or

(b) Substantial contribution through research and publication to the body of scholarly knowledge in the field of American architectural history.

(4) Other Professional Personnel. All other personnel utilized for their special knowledge and expertise must have a B.A. or B.S. degree from an accredited college or university, followed by a minimum of two years of successful graduate study with concentration in appropriate study and a publication record demonstrating competing in the field of study.

(5) Other Supervisory Personnel. Persons in any supervisory position must hold a B.A., B.S. or M.A. degree with a concentration in the appropriate field of study and a minimum of 2 years of field and laboratory experience in tasks similar to those to be performed under this contract.

(6) Crew Members and Lab Workers. All crew members and lab workers must have prior experience compatible with the tasks to be performed under this contract.

c. All operations shall be conducted under the supervision of qualified professionals in the discipline appropriate to the data that is to be discovered, described or analyzed. All contract related activities shall be performed consistent with the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation, and the Society of Professional Archeology's Code of Ethics and Standards. Vitae of personnel involved in project activities may be required by the Contracting Officer at anytime during

the period of service of this contract.

1.4. The Contractor shall designate in writing the name or names of the Principal Investigator(s). In the event of controversy or court challenge, the Principal Investigator shall be available to testify with respect to report findings. The additional services and expenses will be at Government expense, per paragraph 1.9 below.

1.5. The Contractor shall keep standard field records which may be reviewed by the Contracting Officer. These records shall include field notes, appropriate state site survey forms and any other cultural resource forms and/or records, field maps and photographs necessary to successfully implement requirements of the Scope of Work. The Contractor shall supply the original, or copies, of all records to the Corps at the Completion of the project.

1.6. To conduct field investigations, the Contractor will obtain all necessary permits, licenses; and approvals from all local, state and Federal authorities. Should it become necessary in the performance of the work and services of the Contractor to secure the right of ingress and egress to perform any of the work required herein on properties not owned or controlled by the Government, the Contractor shall secure the consent of the owner, his representative, agent, or leasee, prior to effecting entry and conduct the required work unless otherwise notified by Contracting Officer on such property.

1.7. Innovative approaches to data location, collection. description and analysis, consistent with other provisions of this contract and the cultural resources requirements of the Memphis District, are encouraged.

1.8. No mechanical power equipment other than that referenced in paragraph 3.7. shall be utilized in any cultural resource activity without specific written permission of the Contracting Officer.

1.9. The Contractor shall furnish expert personnel to attend conferences and furnish testimony in any judicial proceedings involving the archeological and historical study, evaluation, analysis and report. When required, arrangements for these services and payment therefor will be made by representatives of either the Corps of Engineers or the Department of Justice.

1.10. The Contractor, prior to the acceptance of final reports, shall not release any sketch, photographs, report or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer.

1.11. The extent and character of the work to be accomplished by the Contractor shall be subject to the general supervision, direction control and approval of the Contracting Officer. The Contracting Officer may have a representative of the Government present during any or all phases of Scope of Work requirements.

1.12. The Contractor shall obtain Corps of Engineers Safety Manual (EM 385-1-1) and comply with all appropriate provisions. Particular attention is directed to safety requirements relating to the deep excavation of soils.

1.13. There will be two categories of meetings between Contractor and Contracting Officer: (1) scheduled formal meetings to review contract performance, and (2) informal, unscheduled meetings for clarification,

assistance, coordination and discussion. The initial meeting may be held prior to the beginning of field work. Category (1) meetings will be scheduled by the Contracting Officer and will be held at the most convenient location, to be chosen by the Contracting Officer. This may sometimes be on the project site, but generally will be at the office of the Contracting Officer.

2. DEFINITIONS.

2.1. "Cultural Resources" are defined to include any building, site, district, structure, object, data, or other material relating to the history, architecture, archeology, or culture of an area.

2.2. "Background and Literature Search" is defined as a comprehensive examination of existing literature and records for the purpose of inferring the potential presence and character of cultural resources in the study area. The examination area may also serve as collateral information to field data in evaluating the eligibility of cultural resources for inclusion in the National Register of Historic Places or in ameliorating losses of significant data in such resources.

2.3. "Intensive Survey" is defined as a comprehensive, systematic and detailed on-the-ground survey of an area, of sufficient intensity to determine the number, types, extent and distribution of cultural resources present and their relationship to project features.

2.4. "Mitigation" is defined as the amelioration of losses of significant prehistoric, historic, or achitectural resources which will be accomplished through preplanned actions to avoid, preserve, protect, or minimize adverse effect upon such resources or to recover a representative sample of the data they contain by implementaion of scientific research and other professional techniques and procedures. Mitigation of losses of cultural resources includes, but is not limited to, such measures as: (1) recovery and preservation of an adequate sample of archeological data to allow for analysis and published interpretation of the cultural and environmental conditions prevailing at the times(s) the area was utilized by man; (2) recording, through architectural quality photographs and/or measured drawings of buildings, structures, districts, sites and objects and deposition of such documentation in the Library of Congress as a part of the National Architectural and Engineering Record; (3) relocation of buildings, structures and objects; (4) modification of plans or authorized projects to provide for preservation of resources in place; (5) reduction or elimination of impacts by engineering solutions to avoid mechanical effects of wave wash, scour, sedimentation and related processes and the effects of saturation.

2.5. "Reconnaissance" is defined as an on-the-ground examination of selected portions of the study area, and related analysis adequate to assess the general nature of resources in the overall study area and the probable impact on resources of alternative plans under consideration. Normally reconnaissance will involve the intensive examination of not more than 15 percent of the total proposed impact area.

2.6. "Significance" is attributable to those cultural resources of historical, architectural, or archeological value when such properties are included in or have been determined by the Secretary of the Interior to be eligible for

inclusion in the National Register of Historic Places after evaluation against the criteria contained in 36 CFR 63.

2.7. "Testing" is defined as the systematic removal of the scientific, prehistoric, historic, and/or archeological data that provide an archeological or architectural property with its research or data value. Testing may include controlled surface survey, shovel testing, profiling, and limited subsurface test excavations of the properties to be affected for purposes of research planning, the development of specific plans for research activities, excavation, preparation of notes and records, and other forms of physical removal of data and the material analysis of such data and material, preparation of reports on such data and material and dissemination of reports and other products of the research. Subsurface testing shall not proceed to the level of mitigation.

2.8. "Analysis" is the systematic examination of material data, environmental data, ethnographic data, written records, or other data which may be prerequisite to adequately evaluating those qualities which contribute to their significance.

3. STUDY AREA

3.1. Study Area

The project area is the proposed permit area and associated fill and/or borrow areas.

4. GENERAL PERFORMANCE SPECIFICATIONS.

4.1. Research Design.

Survey, testing and data recovery shall be conducted within the framework of a regional research design including, where appropriate, questions discussed in the State Plan. All typological units not generaed in these investigations shall be adequately referenced. It should be noted that artifactual typologies constructed for other areas may or may not be suitable for use in the study area. It is, therefore, of great importance that considerable effort be spent in recording and describing artifactual characteristics treated as analytically diagnostic in this study as well as explicit reasons for assigning (or not assigning) specific artifacts to various classificatory units. Specific requirements of research designs undertaken as individual work items will be listed in delivery orders.

4.2. Site Surface Evaluation

a. Surface collection of the site area shall be accomplished in order to obtain data representative of total site surface content. Both historic and prehistoric items shall be collected. The Contractor shall carefully note and report descriptions of surface conditions of the site including ground cover and the suitability of soil surfaces for detecting cultural items (ex: recent rainfall, standing water or mud). If ground surfaces are not highly conducive to surface collection, screened shovel tests units shall be used to augment surface collection procedures. It should be noted, however, that such units should be substituted for total surface collection only where the presence of

ground cover requires such techniques.

b. Care should be taken to avoid bias in collecting certain classes of data or artifact types to the exclusion of others (ex: debitage or faunal remains) so as to insure that collections accurately reflect both the full range and the relative proportions of data classes present (ex: the proportion of debitage to finished implements or types of implements to each other). Such a collecting strategy shall require the total collection of quadrat or other sample units in sufficient quantities to reasonably assure that sample data are representative of such descrete site subareas as may exist. Since the number and placement of such sample units will depend, in part, on the subjective evaluation of intrasite variability, and the amount of ground cover, the Contractor shall describe in the study report the rationale for the number and distribution of collection units. In the event that the Contract utilizes systematic sampling procedures in obtaining representative surface samples, care should be taken to avoid periodicity in recovered data. No individual sample unit type used in surface data collection shall exceed 36 square meters in area. Unless a smaller fraction is approved by the Contracting Officer, surface collected areas shall constitute no less than 25 percent of total site areas. No two surface collection units shall be adjacent to each other. Detailed results of controlled surface collections shall be graphically depicted in plan view in the report of investigations.

c. The Contractor shall undertake (in addition and subsequent to sample surface collecting) a general site collection in order to increase the sample size of certain classes of data which the Principal Investigator may deem rerequisite to an adequate site-specific and intersite evaluation of data.

d. As an alternative to surface collecting procedures discussed above, where surface visability is excellent, the Contractor may collect all visable artifacts. If such a procedure is undertaken, the precise proveniences of all individual artifacts shall be related to the primary site datum by means of a transit level.

4.3. Subsurface Testing/Evaluation

a. Subsurface testing and evaluation may include but not be limited to the excavation of formal test units, excavation of informal test units (ex: shovel tests), block excavations, mechanical excavation, stripping and feature excavation.

b. Subsurface test units (other than shovel cut units) shall be excavated in levels no greater than 10 centimeters. Where cultural zonation or plow disturbance is present however, excavated materials shall be removed by zones (and in 10 cm. levels within zones where possible). Subsurface test units shall extend to a depth of at least 20 centimeters below artifact bearing soils. A portion of each test unit, measured from one corner (of a minimum 30 x 30 centimeters), shall be excavated to a depth of 40 centimeters below artifact bearing soils. All excavated materials (including plow zone material) shall be screened using a minimum of ¼" hardware cloth. Representative profile drawings and photographs shall be made of excavated units. Subsequent to preparation of documentation for each test unit, the unit shall be backfilled and compacted to provide reasonable pedestrian safety.

c. Stringent horizontal spatial control of testing shall be maintained by

relating the location of all test units to the primary site datum either by means of a grid system (including those used in controlled surface collection) or by azimuth and distance.

d. If features are encountered in the excavation of formal units, test units, if necessary, shall be expanded and all feature fill (including floatation samples) shall be removed and documented when such expansion and removal is consistent with the quantity of work specified in the contract delivery order. If such removal exceeds authorized work quantities, only the portion of the feature within the initial test units (including a floatation sample) shall be removed and documented. As appropriate, drawings, piece plotting, photographs and other documentation of feature contents shall be made.

e. If in situ human remains are encountered and all skeletal remains and associated cultural items cannot be properly removed and documented under the terms of the contract and delivery order, burials shall not be excavated but shall be carefully refilled in a manner which will afford maximum protection to the burial in the event of later excavation.

5. GENERAL REPORT REQUIREMENTS.

5.1. The primary purpose of the cultural resources report is to serve as a planning tool which aids the Government in meeting its obligations to preserve and protect our cultural heritage. The report will be in the form of a comprehensive, scholarly document that not only fulfills mandated legal requirements but also serves as a scientific reference for future cultural resources studies. As such, the report's content must be not only descriptive but also analytic in nature.

5.2. Upon completion of all field investigation and research, the Contractor shall prepare a report detailing the work accomplished, the results, and recommendations for the project area. Copies of the draft and final reports of investigation shall be submitted in a form suitable for publication and be prepared in a format reflecting contemporary organizational and illustrative standards for current professional archeological journals. The final report shall be typed on standard size 8½" x 11" bond paper with pages numbered and with page margins one inch at top, bottom and sides. Photographs, plans, maps, drawings and text shall be clean and clear.

5.3. The report shall include, when appropriate, the following items:

a. Title Page. The title page should provide the following information; the type of task undertaken, the study areas and cultural resources which were assessed; the location (county and state), the date of the report; the contract number; the name of the author(s) and/or the Principal Investigator; and the agency for which the report is being prepared. If a report has been authored by someone other than the Principal Investigator, the Principal Investigator must at least prepare a forward describing the overall research context of the report, the significance of the work, and any other related background circumstances relating to the manner in which the work was undertaken.

b. Introduction. This section shall include the purpose of the report, a description of the proposed project, a map of the general area, a project map, and the dates during which the investigations were conducted. The introduction

shall also contain the name of the institution where recovered materials and documents will be curated.

c. Research Design. Where possible, the research design should contain a discussion of potentially relevant research domains and questions. Field and analytical methods and other data should be explicitly related to research questions.

d. Fieldwork Methods and Collected Data. This section should contain a description of field methods and their rationale as well as, a description of data collected. All cultural items collected must be listed with their respective proveniences either in the main body of the report or as an appendix. Where appropriate, field methods should be explicitly related to the research design.

e. Analytical Methods and Results. This section shall contain an explicit discussion of analytical methods and results, and shall demonstrate how field data, environmental data, previous research data, the literature search and personal intervies have been utilized. Specific research domains and questions as well as methodological strategies employed should be included where possible.

f. Recommendations.

(1) When appropriate and when sufficient information is available, this section should contain assessments of the eligibility of specific cultural properties in the study area for inclusion in the National Register of Historic Places. Where insufficient data are present for such evaluation, the Contractor shall list activities necessary to obtain such data.

(2) Significance should be discussed explicitly in terms of previous regional and local research and relevant problem domains. Statements concerning significance shall contain a detailed, well-reasoned argument for the property's research potential in contributing to the understanding of cultural patterns, processes or activities important to the history or prehistory of the locality, region or nation, or other criteria of significance. Conclusions concerning insignificance likewise, shall be fully documented and contain detailed and well-reasoned arguments as to why the property fails to display adequate research potential or other characteristics adequate to meet National Register criteria of significance. For example, conclusions concerning significance or insignificance relating solely to the lack of contextual integrity due to plow disturbance or the lack of subsurface deposits will be considered inadequate. Where appropriate, due consideration should be given to the data potential of such variables as site functional characteristics, horizontal intersite or intrasite spatial patterning of data and the importance of the site as a representative systemic element in the patterning of human behavior. All report conclusions and recommendations shall be logically and explicitly derived from data discussed in the report.

(3) The significance or insignificance of cultural resources can be determined adequately only within the context of the most recent available local and regional data base. Consequently, the evaluation of specific individual cultural loci examined during the course of contract activities shall relate these resources not only to previously known cultural data but also to a

synthesized interrelated corpus of data including those data generated in the present study.

g. References (American Antiquity Style).

5.4. All of the above items may not be appropriate to all delivery order tasks. further, the above items do not necessarily have to be in descrete sections so long as they are readily discernable to the reader.

5.5. In order to prevent potential damage to cultural resources, no information shall appear in the body of the report which would reveal precise resource location. All maps which include or imply precise site locations shall be included in reports as a readily removable appendix (e.g.: envelope).

5.6. No logo or other such organizational designation shall appear in any part of the report (including tables or figures) other than the title page.

5.7. Unless specifically otherwise authorized by the Contracting Officer, all reports shall utilize permanent site numbers assigned by the state in which the study occurs.

5.8. All appropriate information (including typologies and other classificatory units) not generated in these contract activities shall be suitably referenced.

5.9. Reports shall contain site specific maps when appropriate. Site maps shall indicate site datum(s), location of data collection units (including shovel cuts, subsurface test units and surface collection units), site boundaries in relation to proposed project activities, site grid systems (where appropriate), and such other items as the Contractor may deem appropriate to the purposes of this contract.

5.10. Information shall be presented in textual, tabular, and graphic forms, whichever are most appropriate, effective and advantageous to communicate necessary information. All tables, figures and maps appearing in the report shall be of publishable quality. Itemized listings of all recovered artifacts by their smallest available proveniences must appear in either the body of the report or as a report appendix.

5.11. Any abbreviated phrases used in the text shall be spelled out when the phrase first occurs in the text. For example use "State Historic Preservation Officer (SHPO)" in the initial reference and thereafter "SHPO" may be used.

5.12. The first time the common name of a biological species is used it should be followed by the scientific name.

5.13. In addition to street addresses or property names, sites shall be located on the Universal Transverse Mercator (UTM) grid.

5.14. Generally, all measurements should be metric.

5.15. As appropriate, diagnostic and/or unique artifacts, cultural resources or their contexts shall be shown by drawings or photography. Black and white photographs are preferred except when color changes are important for understanding the data being presented. No instant type photographs may be

used.

5.16. Negatives of all black and white photographs and/or color slides of all plates included in the final report shall be submitted to the Contracting Officer. Copies of all negatives shall be curated with other documentation.

6. SUBMITTALS.

6.1. Unless otherwise stipulated in the delivery order, the Contractor shall submit 2 copies of the draft report, one unbound original and 5 final report. In the event more than one series of review comments is determined necessary by the Contracting Officer, additional draft copies may be required.

6.2. The Contractor shall include in the report, site drawings which show exact boundaries of all cultural resources within the project area and their relationship to project features.

6.3. The Contractor shall submit to the Contracting Officer completed National Register forms including photographs, maps and drawings in accordance with the National Register Program, if any sites inventoried or tested is found to meet the criteria of eligibility for nomination and for determination of significance. The completed National Register forms shall be submitted with the final report.

6.4. At any time during the period of service of this contract, upon the written request of the Contracting Officer, the Contractor shall submit, within 15 calendar days, any portion or all field records described in paragraph 1.5. without additional cost to the Government.

6.5. The Contractor shall supply the appropriate State Historic Preservation Office with completed site forms, survey report summary sheets, maps and other forms as appropriate. Blank forms may be obtained from the State Historic Preservation Office. Copies of such completed forms and maps shall be submitted to the Contracting Officer within 20 calendar days of the end of fieldwork.

6.6 Documentation. The Contractor shall submit detailed monthly progress reports to the Contracting Officer by the 7th day of every month for the duration of the contract. These reports will contain an accurate account of all field work, and results in sufficient detail to allow monitoring of project progress.

6.7. Additional submittals may be required.

6.8. The Contractor shall make any required corrections to reports after review by the Contracting Officer. The Contracting Officer may defer Government review comments pending receipts of review comments from the State Historic Preservation Officer or reviewing agencies. More than one series of draft report corrections may be required. In the event that the government review period (40 days) is exceeded and upon request of the Contractor, the contract period will be extended automatically on a calendar day for day basis. Such extension shall be granted at no additional cost to the Government.